REMARKS

Applicants respectfully request the Examiner to reconsider the claims currently in the application in view of the following remarks and in accordance with the provisions of 37 C.F.R §1.116.

Claims 1-38 are pending in the application. Claims 1-38 are rejected.

The Rejections under 35 U.S.C. §112, First Paragraph

The Examiner rejects Claims 1 and 9-13 under 35 U.S.C. §112, first paragraph, as containing subject matter which, according to the Examiner, was not described in the specification in such away as to reasonably convey to one skilled in the art that the inventors, at the application was filed, had possession of the claimed invention. In particular, the Examiner asserts, the "[a]dded limitation 'the characteristic/shape of the icon and the third coordinate z is substantially monotonic', was not described in the specification at the time the applicant [sic] was filed." Applicants respectfully disagree.

Applicants respectfully direct the Examiner's attention to the bottom of page 5 and the top of page 6, where a table is shown in which a size of an aircraft icon is related to aircraft altitude ranges. Each range of increasing altitude results in a larger icon, therefore, the relationship is monotonic as claimed. Furthermore, at page 6, lines 3-6 it is stated:

> [f]ive discrete icon sizes 5,7,9, and 14 mm were used to represent five distinct altitude ranges, centered at 15-, 20-, 25-, 30-, and 35,000 ft., respectively. The smallest icon size represented the lowest altitude range while the largest icon size represented the highest altitude range. [emphasis added]

Still further, monotonic relationships between a characteristic of an aircraft and an aircraft altitude are described at page 7, lines 19-22, where it is stated:

> [u]sing size as a cue is an intuitive analog representation of altitude. Objects that are further away naturally seem smaller, while closer objects are larger. Similarly, objects that are further away seen lighter, while closer objects appear

darker. Thus, and intensity (or grayscale level) of the icon might also be a good characteristic for representing altitude.

Applicants would like to point out that it is not necessary to have literal agreement between the language used in the claims and language appearing in the specification in order to satisfy the written description requirement.

Thus, in view of the above descriptions of monotonic relationships appearing in the specification as originally filed, Applicants submit that the rejection of Claims 1 and 9-13 under 35 U.S.C. §112, first paragraph, should be removed.

The Rejections under 35 U.S.C. §103(a)

The Examiner rejects Claims 1-38 under 35 U.S.C. §103(a) as being unpatentable over Hancock (U.S. Patent number 5,179,377) in view of Beasley (U.S. Patent number 5,845,874). The Examiner recognizes that Hancock does not disclose that the z-coordinate represents an absolute altitude of the object, wherein the characteristic of the icon changes in response to changes in the z-coordinate. The Examiner relies upon Beasley to teach this characteristic. The Examiner concludes that "[i]t would have been obvious to one skilled in the art to incorporated the teaching of Beasley into the teaching of Hancock [i.e. adding the representation of absolute altitude of aircrafts in display]... ."

Independent Claims 1 and 9-13 set forth systems and methods for conveying to a user an *absolute altitude* of an object, by way of a characteristic of an icon representing the object on a radar display, wherein the icon characteristic changes in a substantially monotonic fashion in relation to the altitude.

In contrast, Hancock, at column 4, lines 9-10, in describing Fig. 2, discloses a traffic situation awareness display on a craft (abstract), which is described to be an aircraft and for which "...the size of aircraft symbol 42, 44 or 50 has a size related to *altitude differential* from own aircraft represented by symbol 22... ." Applicants understand Hancock to describe, in

conjunction with Fig. 2, a display for which icons associated with aircraft displaced a particular amount both above and below own aircraft are shown having the same size. Thus, Hancock provides a display, which allows a user to visualize altitude conflicts with his own aircraft, which might result in a collision.

The Examiner relies upon Beasley to teach a color characteristic of a display icon that changes in response to an absolute altitude. Beasley describes an air traffic control system having visual representations of simulated wake vortices that "...allows the user to direct aircraft around potentially harmful wake vortices." (abstract) Beasley also describes in relation to FIGS. 4 and 5, at column 5, lines 38-43

> Conventional air traffic control displays and radar displays depict a fixed "god's eye" view of airspace 470. In other words, the viewer looks down through airspace 470 onto runway 410. These types of displays typically include altitude information in the form of a number accompanying an image or blip of the aircraft being displayed. Other displays use a color of the aircraft to indicate altitude information. However, numerical or color altitude information displayed as such do not enable the viewer to visualize the relative distances in three dimensions of the various displayed aircraft.

Applicants submit that, even if the color representations described as conventional by Beasley were combined into the invention of Hancock, still the claimed invention would not result. A combination of Hancock and Beasley would result in the system of Hancock, wherein, the color (as in Beasley) of aircraft symbols shown on a radar display would have a color related to *altitude differential* (as in Hancock) from own aircraft. Thus, the claimed arrangement would still not provide the display representative of *absolute amplitude* as claimed.

Applicants further submit that a different combination of Hancock and Beasley, which does not relate colors of aircraft icons to *differential altitudes*, but which instead relates colors of aircraft icons to *absolute altitude*, destroys the intended function of Hancock, and therefore, alters the fundamental principle of operation of Hancock, which is to display a representation of *differential altitude* to the operator of an aircraft.

As the Examiner is aware, and as found in MPEP §2143.01, in order to establish a prima facie case of obviousness "...[i]f the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims prima facie obvious." Applicants submit that the above-described combination of Hancock and Beasley, which instead relates colors of aircraft icons to *absolute altitude*, changes the principle of operation of Hancock, and therefore, is not a proper combination of references.

Furthermore, as the Examiner is aware, and as found in MPEP §2142, in order to establish a prima facie case of obviousness "...there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings." Applicants respectfully submit that the Examiner has not met this burden in order to establish prima facie obviousness.

Hancock teaches a *particular* way in which aircraft *differential altitude* can be represented by way of aircraft icon size on a radar display. Applicants submit that, already having the representation of aircraft *differential altitude* by way of aircraft icon size, Hancock would not be motivated to search for another *different* (and potentially more complex) way to represent aircraft *differential altitude* on the radar display.

Applicants also submit that Hancock would not be motivated to represent *absolute altitude* on a radar display as suggested by the Examiner, since that is not the display representation that he has selected to be best solution to the problem he attempts to solve. Hancock describes the problem he attempts to solve, for example, at column 1, lines 50-53, where Hancock states "...pilots often find it time consuming and confusing to visually acquire and process dynamic changes in the air traffic situation under moderate or high cockpit work load conditions."

At column 1, lines 54-66, Hancock further states that:

> Attempts of the related art to solve the problems of indirect visualization of conventional displays have focused on basic symbology refinement for the two-dimensional TCAS display format. Efforts have been made to reduce confusion and misinterpretation by modifying the symbols. For example, all the numeric codes were intially displayed above the aircraft symbol with a "plus" or "minus" sign *to indicate relative elevation*. The most current baseline TCAS display presents the numerics either above or below the symbol for conceptual compatibility. No effort has been made to explore other innovative approaches or to empirically validate current design concepts. [emphasis added]

As described above, Hancock specifically searches for a way to display *differential altitude* to an aircraft operator. Therefore, Hancock teaches away from a combination that would provide a display of absolute altitude for his application.

In view of the above, Applicants submit that independent Claims 1 and 9-13 are patentably distinct over Hancock, whether taken alone or in combination with Beasley.

Claims 2-8 and 14-22 depend from and thus include the limitations of Claim 1. Claims 23-24 depend from and thus include the limitations of Claim 12. Claims 25-38 depend from and thus include the limitations of Claim 13. Thus, Applicants submit that Claims 2-8, 14-38 are patentably distinct over the cited references at least for the reasons discussed above in conjunction with Claims 1, and 9-13.

Applicants submit that Claim 5 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "... the size of the icon is selected from a limited number of discriminably different sizes," as set forth in Claim 5. With regard to Claim 5, the Examiner asserts, "...Hancock discloses that the size of the icon is selected from a limited number of discriminably different sizes (See Fig 1-2)." However, Applicants submit that the icons shown in Figs. 1 and 2 have sizes that are a continuous function of amplitude (i.e., have an essentially limitless number of sizes) and not the claimed limited number of sizes.

Applicants submit that Claim 7 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "... the size of the icon is directly correlated with the third coordinate z, such that a larger value of the third coordinate z correlates with a larger size of the icon," as set forth in Claim 7. Applicants respectfully remind the Examiner that "the third coordinate z represents an absolute altitude," as set forth in Claim 1.

Similarly, Applicants submit that Claim 8 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "... the size of the icon is inversely correlated with the third coordinate z, such that a larger value of the third coordinate z correlates with a smaller size of the icon," as set forth in Claim 8.

Applicants submit that Claim 14 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the characteristic of the icon which changes is intensity of the icon and said third means is for correlating the third coordinate z with the intensity of the icon," as set forth in Claim 14.

With regard to Claims 14, the Examiner asserts, "...Hancock further discloses that the characteristic of the icon which changes is intensity [i.e. intensity of color, as manipulating the intensity of color is well known in an analogous are in the process of bit manipulation]...." Applicants respectfully submit that the Examiner may be confusing color with intensity and that color and intensity are two separate and distinct image characteristics. For example, an icon shown in grayscale, i.e., without color, can also have an intensity (e.g., a brightness). The Examiner asserts that the claimed representation of aircraft altitude by intensity of an aircraft icon is obvious, without supporting backup, and Applicants do not agree. The references used by the Examiner do not support the Examiner's assertion.

For substantially the same reasons discussed above in conjunction with Claim 14, Applicants submit that Claim 15 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the intensity of the icon is selected from a limited number of discriminably different intensities," as set forth in Claim 15.

For substantially the same reasons discussed above in conjunction with Claims 7 and 14, Applicants also submit that Claim 16 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...said third means includes a continuously variable relationship between the intensity of the icon and the third coordinate *z*," as set forth in Claim 16.

With regard to Claim 16, the Examiner asserts, "...Hancock discloses that continuously variable relationship between the intensity of the icon and the third coordinate z... ." The Examiner cites Hancock at the abstract and at column 2, lines 21-24 and lines 31-36 in support of his assertion. Contrary to the Examiner's assertion, Applicants can find no mention of intensity in Hancock. As suggested above in conjunction with Claims 14, Applicants respectfully submit that the Examiner may be confusing color with intensity and that color and intensity are two separate and distinct characteristics.

For substantially the same reasons discussed above in conjunction with Claims 7 and 16, Applicants submit that Claim 17 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the intensity of the icon is directly correlated with the third coordinate *z*, such that a larger value of the third coordinate *z* correlates with a higher intensity of the icon," as set forth in Claim 17.

For substantially the same reasons discussed above in conjunction with Claims 7 and 16, Applicants also submit that Claim 18 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the intensity of the icon is inversely correlated with the third coordinate *z*, such that a larger

value of the third coordinate *z* correlates with a lower intensity of the icon," as set forth in Claim 18.

For substantially the same reasons discussed above in conjunction with Claim 7, Applicants submit that Claim 19 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the characteristic of the icon which changes is one or more colors of the icon and said third means is for correlating the third coordinate *z* with the one or more colors of the icon," as set forth in Claim 19. Applicants again remind the Examiner that the third coordinate z represents an absolute altitude.

Applicants submit that Claim 21 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest, "...aspects of the one or more colors of the icon have a continuously variable relationship with the third coordinate *z*," as set forth in Claim 21. In contrast, Hancock teaches in Column 4, lines 8-42, that the aircraft symbol can be red or yellow, indicative of an "advisory condition" and a "traffic alert," respectively, which represent a limited number of discrete colors, and which are not representative the third coordinate *z*, which corresponds to absolute altitude.

Applicants submit that Claim 22 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the characteristic of the icon which changes is *shape of the icon* and said third means is for correlating the third coordinate *z* with the shape of the icon," as set forth in Claim 22. Applicants submit that a shape is irrespective of a size.

For substantially the same reasons discussed above in conjunction with Claim 5, Applicants submit that Claim 26 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the size of the icon is selected from a limited number of discriminably different sizes," as set forth in Claim 26.

For substantially the same reasons discussed above in conjunction with Claim 7, Applicants submit that Claim 28 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...correlating includes a direct relationship between the size of the icon and the third coordinate *z*, such that a larger value of the third coordinate *z* results in a larger size of the icon," as set forth in Claim 28. Applicants respectfully remind the Examiner that the third coordinate z represents an absolute altitude

Similarly, Applicants submit that Claim 29 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...said correlating includes an inverse relationship between the size of the icon and the third coordinate *z*, such that a larger value of the third coordinate *z* results in a smaller size of the icon," as set forth in Claim 29.

For substantially the same reasons discussed above in conjunction with Claim 14, Applicants submit that Claims 30-34 are further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...intensity of the icon... ," as set forth in Claims 30-34.

For substantially the same reasons discussed above in conjunction with Claim 21, Applicants submit that Claim 37 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...aspects of the one or more colors of the icon have a continuously variable relationship with the third coordinate *z* ... ," as set forth in Claim 37.

For substantially the same reasons discussed above in conjunction with Claim 22, Applicants submit that Claim 38 is further patentably distinct over Hancock, whether taken alone or in combination with Beasley, since the cited references neither describe nor suggest "...the characteristic of the icon which changes is shape of the icon ... ," as set forth in Claim 38.

Accordingly, Applicants submit that the rejection of Claims 1-38 under 35 U.S.C. §103(a) should be removed.

In view of the above Remarks, Applicants submit that Claims 1-38 and the entire case are in condition for allowance and should be sent to issue and such action is respectfully requested.

It is submitted that this amendment places the application in condition for allowance or in better form for consideration on appeal, and thus, entry of this amendment is respectfully requested under the provisions of 37 C.F.R. §1.116.

The Examiner is respectfully invited to telephone the undersigning attorney if there are any questions regarding this Response or this application.

Respectfully submitted,

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